

THE ZOOLOGIST

No. 888.—*June 15th, 1915.*

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE, 1914.

By O. V. APLIN.

January 1st.—Hard weather. A slow thaw set in.

2nd.—Starlings began to chatter. Hedge-Sparrow continues to sing.

3rd.—A Kingfisher killed by flying against the bridge in the middle of the village.

8th.—A very fine adult female Peregrine Falcon at the stuffer's, shot near Shenington about the 2nd inst.; of a very rich yellowish salmon-colour on the under parts. I heard later that a Peregrine was seen at Clattercote Reservoir a day or two before—perhaps the same bird.

9th.—Song-Thrush sang fairly well at 8 a.m. Mistle-Thrush well all day. Blackbird in rather a low tone in the middle of the day.

13th.—Many small birds round the ricks. Greenfinches very numerous now. Over thirty killed at one shot in a yard where poultry are fed.

15th.—News of a Hedge-Sparrow's nest with two eggs found in a field-barn at Salford on the 2nd inst. The bird was seen to visit the nest, but deserted it, owing probably to thrashing corn being carried on there.

19th.—Hedge-Sparrow sings occasionally (a Thrush on the 13th; cold day).

22nd.—Capt. J. V. Taylor, of North Aston (as he afterwards informed me by letter), saw over the flooded Bestmoor a

Sparrow-Hawk attacking a Common Buzzard. The hawk kept stooping at the Buzzard, which appeared to turn on its back and strike up at the hawk, uttering a loud squawk. Capt. Taylor, who had a strong pair of field glasses, and was often within thirty or forty yards of the birds, watched them for half-an-hour and saw the hawk stoop nine or ten times. Once the birds were so low that the Buzzard splashed into the water as the hawk stooped, but curiously enough the Ducks on the water took no notice, though they were right among them. Mr. Rose, of North Aston Mill, had also seen the two birds, and spoke of the size of the Buzzard, the first he had seen. Capt. Taylor said there had been two or three hundred Duck on Bestmoor (about seventy acres) daily for some weeks.

26th.—Thrush sang again. A Grey Wagtail in a running ditch at Wickham.

28th.—Mistle-Thrush sang well, early. A few Song-Thrushes singing; we have had a few of them here all the winter, but they have been silent a good deal.

29th.—Mr. E. Colegrave told me he saw a Great Grey Shrike at Bletchington about a fortnight ago. He got within six yards of it, and said it was a beautifully clear grey specimen.

30th.—Mistle-Thrushes sing beautifully now, from daylight on; but, as usual, not in the later afternoon.

31st.—Larks sang a little.

A cold frosty month (except the 9th and 10) until the 28th. Some snow, but weather not severe. Very dry. Rain on ten days; .68 inches only.

February 4th.—About 4 p.m. a flock of Geese flew over here, going E. N. E. From their curious cackling cry I think they might have been White-fronted Geese. They passed over the Grove estate, and were then estimated at four hundred. Black-bird sang again.

6th.—First rain this month.

14th.—Flock of about thirty Fieldfares on the wing.

16th.—Chaffinches singing well; an increase of old males lately.

25th.—Wood Pigeons cooed, the first noticed this winter.

26th.—Garden primroses at their best now. Rooks building, or playing at it.



27th.—A very clear evening. At 6.10 p.m. Song-Thrush, Tawny Owl, Partridge and Peewit (spring calls from hill), all to be heard at the same time; and Blackbird's song just before.

28th.—A male Blackcap in the garden, sang a little (*vide* 'Zoologist,' 1914, p. 237). Yellow Bunting singing. Fieldfares passing east at intervals, a few at a time.

About the end of this month Mr. Taylor saw a flock of Black-headed Gulls on his farm at Salford, and shot one. This farm, partly on the slope of the hills, is still a great resort of Peewits, and a score of eggs are sometimes found in a day when an arable field is being "worked" in the spring.

A mild month, colder towards the end. Rain on thirteen days; 2.27 inches.

March 6th.—Many Rooks' nests at Broughton. Some apricot blossom out.

7th.—The Blackcap singing for some time in the rain. It got out a good note once, and sang for five minutes at a stretch. Daffodils in flower.

8th.—Robin building (*vide* 'Zoologist,' 1914, p. 237).

9th.—Blackcap singing in the rain.

12th.—Floods coming out.

13th.—Goldfinch in my garden. The Blackcap singing rather well—some high notes.

15th.—Blackbirds very numerous, and the amount of song remarkable.

16th.—Song-Thrush's nest with one egg. The nest is small, badly made and placed, and the egg is small, as these early eggs usually are.

21st.—Snow on the last three days and frost.

23rd.—A pair of Goldfinches.

24th.—Greenfinch singing. Rooks cawing about nests until nearly 7 p.m. Hedges getting green in sheltered places.

25th.—A Marsh-Tit.

28th.—A Great Tit sitting in a hedge and singing from the same spot for some minutes. The song was "chaff, chaff, chaff, chiddy-wid" (or "chiddy-widdy") over and over again.

31st.—Blackthorn out. Great flock of Chaffinches, with some few Greenfinches, Yellow Buntings, Tree and House-Sparrows on a newly drilled field.

A Swallow at Kingham (Mr. W. W. Fowler).

A wet month. Rain on twenty-three days; 3.50 inches.

April 3rd.—Chiffchaff.

8th.—A clutch of four Crow's eggs, incubation just begun, brought in. Nest only slightly hidden in the upper fork of an elm. A second nest held one fresh egg. This is an early date for a full clutch. Pear blossom on wall.

10th.—A number of young Song-Thrushes and Blackbirds on the wing. Two Willow-Wrens (sang). Crown Imperial in bloom.

11th.—Two Swallows here, late in the afternoon. Young Mistle-Thrushes on wing.

12th.—For the second (mild) winter running the outdoor fuchsias have not been cut down to the ground, as they generally are here. A Small Garden White butterfly. House-Martin at Kingham (Mr. Fowler), early.

13th.—Redstart here. Tree-Pipit at Kingham (W. W. Fowler).

14th.—A good many Swallows about.

15th.—Small Tortoiseshell and Sulphur butterflies. Tree-Pipit (3) here. Redstart and Sandpiper at Kingham (W. W. Fowler).

16th.—During six or seven hours' Otter-hunting in the Evenlode Valley, above and below Charlbury, I only noticed, of migrants, many Tree-Pipits and Willow-Wrens, and one Chiffchaff. Cloudless sky.

18th.—Lesser Whitethroat at Kingham (W. W. Fowler), who writes to-day: "I have seen several cock Redstarts, and hope we are going to have them again at last." (But later they seem to have moved on.) "I have seen no Blackcap." He reports a Peregrine Falcon seen about there a few days before; also a Kittiwake picked up dead at Sarsden the day before.

19th.—My children saw a Squirrel in a fir belt near the village. I have not seen one in the parish for a very long time. A good many "Sulphurs" lately.

20th.—Cuckoo and Lesser Whitethroat.

21st.—Whitethroat. Orange Tip. A Nuthatch "twitting" on the Grove lawn.

22nd.—Green Woodpecker cutting out a hole in a poplar.

23rd.—Swallows, which have been away from the village,

perhaps on account of the dry weather, returned to-day. A slight shower.

25th.—Three Ray's Wagtails, near Adderbury, and one in the Cherwell Valley. Common Sandpiper. Found two old Otters and at least one cub in the Cherwell below Twyford Mill. Of the two old ones killed one looked quite 27 lb. and had old broken teeth.

27th.—Hawthorn in blossom.

29th.—Oaks coming out very early.

30th.—An increase of Swallows; the birds which breed in my buildings arrived, or some of them. Swifts arrived (six or eight) early. Blackcap (migrant) singing in front of the house. House-Martin (one) arrived here.

A warm and dry month. Rain on eleven days only amounted to .83 inches.

May 1st.—Oaks very early. Some have leaves two and a half to three inches, and oak galls as big as a "solitaire" marble. Gulls flying over, N., 8.30 p.m., moonlight. From their squeaky cries they seemed to be *Larus canus*.

2nd.—A very fine Whimbrel shot in a field near Deddington, where it had been seen all the previous day. A most destructive frost.

3rd.—There are four or five male Blackcaps near here, more than I have noticed for years. Redstarts too are more common, and I have seen eight or ten males.

5th.—One young Rook at least could fly well. A Goldfinch's nest in a horse-chestnut tree in the village. Garden Warbler.

6th.—Cuckoos very scarce, and I have heard the call hardly ten times this spring.

8th.—A Whinchat.

10th.—Swallows have mostly left the village, perhaps on account of the dry and cold weather. The oaks were earlier in leafing than I ever remember them before, and the ash is as remarkably late; no signs of growth on most of them yet.

13th.—Kestrel had five eggs in one of this year's Crow's nest, from which the eggs were taken.

14th.—Many Orange-Tips now and Holly Blues round a holly-tree here. Swifts screaming well for the first time.

15th.—Went to North Aston Mill to see some birds reported

as Curlews breeding on Bestmoor, a meadow of about seventy acres in the Cherwell Valley. As I expected, they proved to be Redshanks. The nest, with eggs, was found by the tenant at the end of April; but as he could not be found to-day we did not see it. It was described as "domed over" like a Magpie's. This, no doubt, meant that the grasses were brought together over the nest. We found the birds in the middle of the meadow, and they flew close to us uttering the "toor-e-loor" sometimes, but generally the "klip klip klip" of alarm, and we concluded they had young out in the grass. Mr. Rose, who took great interest in them, told me later that after the heavy rain of the 9th-11th June, bringing out a flood, he thinks the birds brought their young up the steep bank at the back of the moor and on to arable land. The old birds mobbed him there, coming very close and settling on a tree and a building. I believe the birds were seen the previous year; but no observations were made on them. This is a welcome, but not unexpected, extension of the breeding range of the Redshank in Oxon (*vide* 'Zoologist,' 1913, p. 325). We saw in a small steep bank in a field bordering the mill-tail a Kingfisher's nesting-hole. It was a place where earth or clay had been dug and was about five feet high. We could hear the young. The hole was about two feet deep and sloped upwards, allowing the filth to drain off. It was made and occupied last year. The birds always approach under a hawthorn bush at the edge of the mill-tail; and on leaving the hole always dive into the water. Mr. Rose thinks this is to wash themselves. We found a Reed-Bunting's nest with five eggs in a patch of flowering marsh marigold, with no other or higher cover, in the middle of the moor. A Sand-Martin was breeding in a drain-pipe let into a bridge carrying the road over the river; and a Wren had made a most conspicuous nest of brown dead leaves in the side of a haystack. The reeds here have made a heavy growth this year, the river banks having been uncleaned for some time, and we noticed a good many Reed-Warblers.

17th.—In a very long round in a car to-day into South Oxfordshire and parts of Bucks, we only heard the Cuckoo once. A fine bright day, and we stopped for lunch in the Chiltern Woods. Swifts were noisy, numerous, and low down in Chinnor village—a great place for them, I remember, more than thirty

years ago, and where they breed in holes under the eaves in the thatched cottages. A Corn-Crake reported heard to-day at North Aston Mill, the only one I heard of.

18th.—The scarcity of the Cuckoo is much remarked on. Blackcaps have sung little since the 12th, and have, I fear, passed on. Several pairs of Goldfinches about.

24th.—Flycatcher. Mr. Fowler wrote on this day of the scarcity of summer migrants, especially Whinchats, on the railway banks, where many pairs used to breed. He writes: "No Whinchats, no Yellow Wagtails, no Redstarts (or only one pair seen by A. H. M., which I can't find), and, still more amazing, no Flycatchers."

26th.—A most destructive wind-frost. A pair of Flycatchers in the garden for the first time.

27th.—Another frost.

30th.—Flycatcher's nest in half a cocoanut shell, torn down, by a cat probably, contained already three eggs. Peewit's nest with three fresh eggs. Another with four, slightly sat on, yesterday.

31st.—Redstart still sings. Turtle Dove.

The difference between the oak and the ash leafing is greater than I ever knew it before. Oaks came out in April, but the ash is hardly in full leaf, and some trees have shot very little yet. Some of them were cut by the last frost. A destructive drought now in progress. A dry month, with some hot days in the latter half. Rain (1·09 inches) spread over fourteen days, and therefore of little use.

The following is a short report on the numbers of the summer migrants noticed this year:—

Meadow-Pipit; very few passed. Chiffchaff; very scarce. Blackcap; several in April, more than for some years, but seemed to go on without breeding. Swallow; very few and some nests here not occupied. House-Martin; numerous; more than in the last year or two. A steady recovery. Willow-Wren; average of recent years. Cuckoo; scarce at first. Rather more later, but below the average of recent years. Tree-Pipit; average number. Whitethroat; average of recent years only. Lesser Whitethroat; scarce. Redstart; several pairs; more than for some years, but still far less common than

it used to be. Nightingale; none here. Garden Warbler; average. Turtle-Dove; scarce. Swift; below average. Whinchat; very scarce; only two pairs noticed. Ray's Wagtail; twice seen at migration time; none seen breeding. Flycatcher; very few. Shrike; none. Quail; none. Corncrake; none here. One at North Aston.

June 1st.—Visited Otmoor and found it unusually dry; the broad drains which last year were deep in water and impassable were now dry. Almost the only water in the "lakes" was in the big one called Fowls' Pill. The grass was late. We found several pairs of Redshanks, which mobbed us as if they had young. Several Snipe were "drumming," and others calling "wittuk" in the grass, and we flushed two birds. I again noticed Meadow-Pipits, two in song. There were a few pairs of Peewits on and around the moor; and a pair of Redstarts about the old willows by the Roman Way.

9th.—Mr. J. W. Palmer writes from Blenheim Palace to the 'Daily Mail,' as follows: "A steamboat with a weed-cutting apparatus is used on Blenheim lake to rid the lake of growing weeds. This boat is engaged at intervals, and has been so engaged for the last four weeks, sometimes steaming for as long as four or five hours at a stretch. A pair of Moor-fowl have built a nest in the stern of the boat, and the Moorhen has laid seven eggs therein, and up to the present moment has hatched out four birds; the remaining three eggs are chipped and the young will soon be afloat."

13th.—Heavy rain has fallen.

15th.—Went to North Aston Mill to visit the colony of Reed-Warblers, and found six nests, all where there was a good growth of reed (*Phragmites communis*). The birds do not breed in the beds of bullrush (*Scirpus lacustris*) or frequent them much. It was a brilliant early evening and I always noticed the birds near the nests and heard the song as we approached. The nests were all supported by reed stems (old and new) except in the case of the fifth, which was supported by two slight reeds and the stems of a *Thalictrum flavum*; a curious circumstance, as this is a very rare plant here. (i) Nest empty and I think flooded by the rise of the river about the 11th; (ii) Five eggs slightly sat on; (iii) Five eggs, hard set; (iv) Four young,

feathering; (v) Four fresh eggs; (vi) With big young, some of which left the nest when I parted the reeds.

18th.—Haymaking begun.

19th.—A Blackbird sang a short song at 8.55 p.m.; the Blackbird here does not sing late in the evening, so this was most exceptional.

25th.—Heard a Blackcap here again.

28th.—Mr. Fowler writes that "a Marsh-Warbler is now singing away charmingly in the original place of all, where you and I first heard it."

Barred Woodpeckers about the garden lately and especially frequent on an old damascene tree. They often call in a low tone. This is a familiar bird on the whole. When I was sitting on the lawn one of them flew out of a low tree and passed close to me.

A dry month. Rain on nine days amounted to 2.68 inches. But as 1.86 inches of this fell in forty-eight hours, ending on the 10th, it saved the situation.

July 1st.—A destructive thunderstorm.

4th.—A white House Sparrow with pink eyes, which could just fly, caught in this village.

6th.—Some young Partridges could fly well, but one ran and hid itself in a tuft of grass. It was about as big as a Corn-Bunting, and the others looked so on the wing, less the tail, but the broad well-developed wings gave a broader appearance. Wing full feathered and body feathered, but the head and part of the neck still in down. I have seen only two Cinnabar moths this year.

13th.—A Holly Blue in garden.

26th.—Martins already congregate on house; this morning and earlier.

27th.—To see a young Cuckoo in a Pied Wagtail's nest built in jasmine, on the porch by the side of the front door at Wickham Mill. It was fledged, with tail about an inch long; and very fierce, striking with its wings, open-mouthed. It also pecked our fingers. Robin singing.

Rain (2.50 inches) on eighteen days.

August 2nd.—Goldfinch still singing in garden.

10th.—About a dozen Swifts, rather noisy.

11th.—Seven or eight Swifts.

12th.—Five or six.

14th.—Could see none.

15th.—Mr. T. A. Page told me that on the 14th at Enstone he saw a flock of large birds something like Herons flying in single file. The leader "marked time," the rest came up, and the flock then proceeded in a long line abreast. Their formation he said was quite regular. They flew about east, and there were twenty-seven of them. This description suggests Cranes very strongly.

18th.—We have had more Jays here than usual this summer.

21st.—When walking between the hedge and a crop of barley, or just inside the latter, I flushed a Land-Rail at my feet. I feel sure none bred in the parish this year.

22nd.—A lot of Martins on the roof. Between 9.30 and 10 p.m.—dark, cloudy, calm, with rain at intervals, a small flock of Whimbrel (from the cries, perhaps ten to twenty) passed over, going south. They were just in front of this house and I should think not much higher. I have often heard them pass over, but never before heard their cries so loud. Probably in the thick dark night the few village lights attracted them; but they went steadily on.

24th.—A Whiskered Bat caught in the house.

27th.—Willow-Wren singing.

30th.—Harvest chiefly finished, except some late barley.

31st.—A Grey Wagtail seen at Wickham Mill. A fine dry month after the first part. Rain (1.43 inches) on eleven days.

September 1st.—Blues, Small Heaths and Gatekeepers swarming, and a Painted Lady. Some Blues and Gatekeepers settling on wet mud round a spring.

Five Land-Rails reported seen near Milcomb.

4th.—Six guns and beaters walked nine and six acres of standing barley here without seeing one.

7th.—A number of House-Martins were swarming under the south eaves of my barn, and settling on the wall, before breakfast. They returned time after time when disturbed, but I could see nothing to attract them.

8th.—Many Red Admirals feeding on fallen plums, &c., lately; some Painted Ladies.

9th.—A few Wagtails on ploughing.

12th.—Many Martins on roof early in morning.

13th.—Five Red Admirals close together. Chiffchaff in song all the month.

19th.—Saw a silver-grey Hare (*vide* 'Zoologist,' 1915, p. 67).

20th.—A big gathering of Martins.

23rd.—A frost this morning. For the first time there were Meadow-Pipits in the root fields; many of them.

24th.—Swallows and Martins gone, all but a very few.

27th.—A pair of Martins.

30th.—Here still and one or two other birds. A very good Partridge season; the best for a good many years. Red-legged Partridges have made up their thinned ranks to some extent.

A fine dry, warm month. Rain (1'30 inches) fell on eight days.

October 2nd.—About a score of Martins and a few Swallows together; passing birds, doubtless.

4th.—A few Martins here. A good many Jays about recently; too early for migrants (*cf.* August 18th).

5th.—A few Martins here.

6th.—A Song-Thrush sang, the first this autumn. Larks singing (last heard, July 18th). Wren and Hedge-Sparrow sing.

11th.—Country dust-dry. Trees and hedges change fast.

12th.—Very few migratory Meadow-Pipits this year.

14th.—The first rain for weeks.

22nd.—Pied Wagtail singing.

Rain (1'62 inches) on eleven days.

November 1st.—Hedges thinned; tree leaves all turned and many down.

7th.—A Common Buzzard seen at South Newington Hill to rise from a field where Pheasants and poultry had been reared. My informant, a Somerset man, knows this bird very well.

10th.—A Water-Rail in South Newington osiers. A few Meadow-Pipits in fields. Fieldfares have arrived and are scattered about in very small numbers. A Greenfinch sang.

14th.—A few Redwings.

15th.—Weather changed. Slight snow after frost.

18th.—A Nuthatch at the Grove, and some Bramblings heard. Larks have been silenced by the colder weather. A Corn-Bunting sang.

19th.—News from Mr. Heatley Noble of a Puffin caught alive recently in Oaken Grove, a few yards over our borders in Bucks.

23rd.—Very few Fieldfares here, and I can see no Redwings now.

24th.—Near Thrup I saw a flock of Peewits and Golden Plovers (separating at once) rise from some rushy fields. A Kestrel quietly hunting along a hedgerow at 4.15 p.m., seventeen minutes after sunset, and misty.

25th.—Milder weather again. Song-Thrushes singing again.

Mr. Fowler reported three or four Hooded Crows at Kingham about the end of this month, and a flock of Golden Plovers.

A rather wet month. About $2\frac{3}{4}$ inches of rain fell on nineteen days.

December 3rd.—An aconite just out. *Chimonanthus* in flower.

13th.—*Galanthus elwesii* out. Fieldfares and Redwings in quite small numbers this year, although the hedges are red with hips and haws.

19th.—A big flock of Fieldfares passed over, going south.

20th.—Colder weather.

21st.—Two or three inches of snow on ground.

23rd.—Very big floods about Oxford. Few Song-Thrushes wintering here.

24th.—More Redwings have arrived.

28th.—A very heavy fall of snow at night, fortunately melting to some extent.

29th.—Snowstorm was one of heaviest of recent years, and had not much of it melted as it fell, snow would have been very deep. As it is, it is six inches deep, and all shrubs much bowed down. A good deal of damage done. Fieldfares passing over at 4.30 p.m.; moonlight.

30th.—Snow melting fast.

31st.—Country very wet. Great floods in all the valleys. An Egyptian Goose, a straying bird of course, was shot about the end of the month at Great Rollright.

A very wet month; over 6 inches of rain besides snow, and it rained on twenty-three days.

NOTES ON STARFISHES FEEDING UPON *SIPHONOSTOMA TYPHLE*.

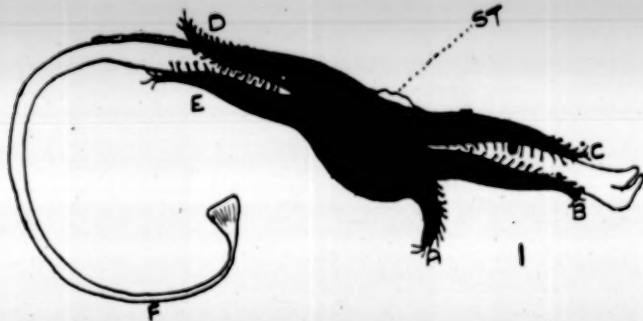
By H. N. MILLIGAN, F.Z.S.

In the April issue of 'The Zoologist' I published a paper describing the way in which two Common Starfishes made meals of two Pipe-fishes of the species known as *Nerophis æquoreus*. I have now to record the movements and behaviour of these two asteroids in feeding upon a Broad-nosed Pipe-fish (*Siphonostoma typhle*), which was considerably larger, and therefore more difficult to deal with, than either of the two *Æquoreal* Pipe-fishes.

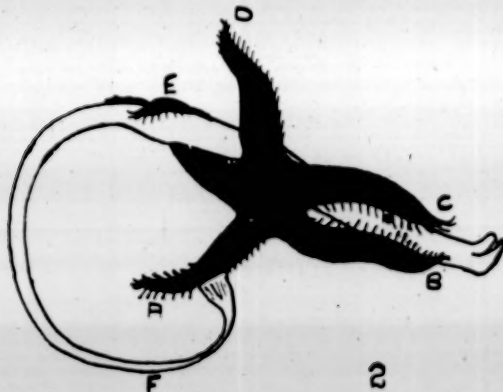
The Broad-nosed Pipe-fish, which measured twelve inches in length, five-sixteenths of an inch at its broadest, and three-eighths of an inch at its deepest part, although not in good health on the evening of April 8th, did not seem likely to die that night. On the following morning, however, I found that the Pipe-fish was dead, and that a Starfish was straddling over it. I do not know whether the fish had been grasped by the asteroid before or after death, but in the former case it seems probable that the Pipe-fish must have been in an exhausted condition when it was seized, because both this Pipe-fish and another individual of the same species, as well as two examples of the Pipe-fish known as *Nerophis ophidion*, had lived for several weeks in the same aquarium without being touched. I may here remark, however, that I have seen one of the Starfishes grasp with two of its arms an unhealthy and sluggish Fifteen-spined Stickleback, though without being able to retain it. I do not think the Starfish had been sitting over the Pipe-fish for more than about an hour before I found it, because, so far as I could see, only a little of the skin of the fish had yet been digested. The difficulties with which the Starfish had to contend in holding firmly the long body of the Pipe-fish were increased by the asteroid being on the side, not on the bottom, of the aquarium.

At 9.45 a.m. the Starfish, which I will call A, in order to distinguish it from the other Starfish in the aquarium, was in the posture shown in fig. 1, the bent tail of the fish resting on

the floor at F. The everted stomach (lettered ST) of the Starfish could be seen pressing upon the body of the Pipe-fish. The Starfish had placed its arms B and C parallel with, and on opposite sides of, the fish's head, and its arms D and E in the



same way along the fish's abdomen, apparently in order to prevent the long body moving from side to side and so disturbing the everted stomach of the asteroid. I had to record this method of holding the food firmly in my former paper. Some of the tube-feet of arms B and C, and of D and E, were attached by their disc-like ends directly to the body of the fish,

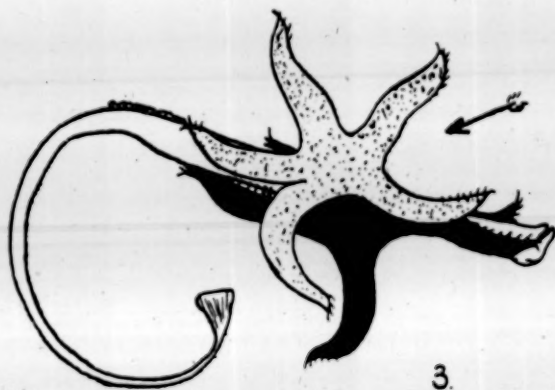


while others were merely laid across it without actually being attached to it. The Starfish hung upon the side of the aquarium by means of the tube-feet of arm A and some of those of the other arms, as shown in fig. 1. The disc of the Starfish was humped up in the usual feeding posture, and the papulae stood out conspicuously upon the upper parts of the disc and arms.

The Starfish apparently found the Pipe-fish too heavy a load to support for long in this awkward attitude, and it later shifted arms A and D to the positions shown in fig. 2, at the same time

curling the arm E tightly round the hinder part of the abdomen of the fish. Fig. 2 may be taken to represent the position of the Starfish between 10.15 and 11 a.m., but it was constantly making slight alterations in its attitude, and at no time was it quite still.

The other Starfish, which I will call B (*dotted* in the figures), had now begun to move towards the Pipe-fish. Starfish B had to travel about two feet in order to reach the Pipe-fish, and it moved so directly towards the latter as to leave little doubt that it had smelt the dead fish. At about 11.30 Starfish B reached, and began to press over and against, Starfish A (*black* in the figures) in the way shown in fig. 3, in which

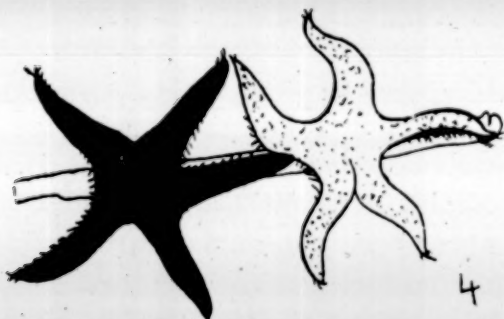


the arrow indicates the direction in which B had moved towards the food. Starfish A seemed to be so much alarmed, or annoyed, by the persistent pushing of B, that within a minute or two of the arrival of the latter the former quitted the Pipe-fish and retreated to the floor of the aquarium.

Starfish A, however, only went about three inches away from the side of the aquarium, and then began to move to and fro, parallel with the body of the Pipe-fish, in a way which suggested that it was too much attracted by the smell of the fish to leave it, and by 12.15 p.m. it had wandered back again to the food. Both Starfishes must now have released their hold on the wall and retained a grasp only of the Pipe-fish, for the asteroids and the fish toppled over and fell to the bottom, where they assumed the positions shown in fig. 4.

Once more, though precisely at what time I do not know, Starfish A moved away from the Pipe-fish, and at 1.10 it was at

a distance of about three inches, moving irresolutely to and fro. It will be observed that again it was A which suffered itself to be driven off by B, although the former is slightly the larger of the two Starfishes. I thought on the first occasion that the retreat of A might be due to its being unable, with its everted and



therefore vulnerable stomach, to bear the thrusting action of B, the latter not having the disadvantage at that time of an everted stomach. The return and second retreat of A, when the conditions were reversed, seem to show that this apparent explanation is the wrong one, and I can only now suppose that B is a stronger and more vigorous animal than A.

I was not able to note the behaviour of the Starfishes at any time during the remainder of the day, but on the next morning I found Starfish B, perfectly still, at the opposite end of the aquarium, about two feet away from the Pipe-fish, while Starfish A was straddling over the latter, which it quitted at 10.15 a.m. I had now reluctantly to remove the decomposing body of the fish, which was beginning to make the water foul and cloudy, and consequently I could not make any further observations upon the behaviour of the Starfishes with the Pipe-fish.

I pointed out in my April report that those parts of the Pipe-fishes over which a Starfish had sat were digested and skeletonized. This Broad-nosed Pipe-fish had not been so well cleaned, partly no doubt because it was a bigger animal, but possibly also because the two Starfishes had each moved the Pipe-fish so much that neither had been able to press its stomach tightly enough upon the food. The fish had lost only a portion of the contents of its abdomen, together with patches of skin from the snout, head, and parts of the tail. Neither of the Starfishes had been fed for two days before that on which they began to eat the Pipe-fish.

NOTES ON THE COURTSHIP OF THE LAPWING.

BY MAUD D. HAVILAND.

I.

DURING the early spring of 1912 and 1913 my attention was drawn to the courtship procedure of the Lapwing (*Vanellus vanellus*). My observations in these years were a good deal interrupted, chiefly owing to the lack of a suitable spot for observation; but in 1915, for a month from the middle of February onwards, I was able to spend some hours three or four times a week with the birds. Several pairs of Plover frequented this breeding ground, which consisted of two or three fields of fallow and stubble, separated by a deep grass lane, which was screened by high hedges. By making a *détour*, and approaching the spot by the lane, it was possible to hide in the hedge quite unseen by the birds, and I have frequently watched the actions to be described at a distance of sixty yards through $\times 8$ binoculars. Most of my observations were carried out early in the morning, partly for the sake of convenience and partly because at that hour there was less risk of disturbance by labourers working in the fields. The birds also showed the greatest activity just after sunrise, and, generally speaking, later on there was little doing.

Ten years ago Mr. Edmund Selous published an account of the courtship of this species,* but the conduct of the birds under my observation differed in several particulars from those that he described. Variations of climate, environment, and the physical condition of the individual bird make much difference to the form of courtship. Therefore, I venture to depart from the example set by Mr. Selous, and in the following account, which relates merely to my own experience, it is proposed to use the past rather than the present and more dogmatic tense.

* 'Bird Life Glimpses,' p. 163.

II.

For the purposes of this paper it is necessary to include in the term "courtship" all behaviour that is peculiar to the bird in the spring time, and not to confine it merely to those actions that are performed under the direct stimulus of the presence of the female. Thus considered, the courtship of the Lapwing comes under four heads, and these heads, for the sake of convenience, I propose to call by the names by which they are distinguished in my field notes:—

- a. The aerial tumbling.
- b. Stone picking.
- c 1. } Hustling.
- c 2. }
- d. The display.

(a) Can be dismissed in a few words, for, although the swooping and turning and the well-known call are characteristic of the spring season, they have nothing to do with the courtship proper.

(b) This also has only indirect bearing on the true courtship, but having regard to what will be related presently, it has been thought well to include it here. The cock bird stands sometimes for several minutes together picking up minute pebbles and flinging them over his shoulder. Occasionally, also, dry grass stems are gathered and thrown aside. The same action may be observed in the female bird when uneasy, for example, if she is kept for long away from her eggs, and *in itself* it is not indicative of more than a certain amount of restlessness and physical discomfort.

(c 1) This was much the commonest action, and is what Mr. Selous calls "rolling." However, I prefer this name of my own coining as being more descriptive of the nature of the action. The bird sank down and hustled the ground under his feathers in the same way as a nesting bird who prepares to cover her eggs. At such times the tail was held almost vertically, and the wings were partly opened. The bird's body moved up and down in rhythmical throbs. If the simile that occurred to me at the time may find place here, it resembled the pulsating movement of the abdomen of a wasp who cleans his legs and wings after a visit to the honeypot.

(c 2) This was a variation of the action described above. The preliminary movements were the same as in c 1, but when the bird was on the ground the wings were half opened, the head was curved under the breast, and the tail was spread fan-wise and sharply depressed. This attitude, which was nothing more nor less than a faithful representation of the sexual act, was generally both preceded and followed by c 1. It probably was the result of increased sexual excitement, for by reference to the accompanying chart it will be seen that it was indulged in more and more frequently as the pairing season advanced.

(d) This phase of the spring performance was the only one which took place under the direct observation of the female. I noticed it five times, and in each instance a hen bird, who was standing quietly some yards away, ran up to a male who was performing as in c 1, and pushing him aside, stepped on to the same spot upon which he had just been posturing and covered it herself. The cock bird with flattened crest and out-stretched neck ran stiffly away from her for a couple of feet. He then took up a position with his back turned to her, and the tail raised until it pointed upwards almost perpendicularly, and the tawny under coverts were fully displayed. He remained thus from thirty to fifty seconds, but each time the exhibition was rudely interrupted by another Lapwing, who swooped down upon the posturing bird, and the group broke up in the usual wild aerial romping.

All the preceding actions are noted by Mr. Selous. His description of *d* up to a certain point is identical with my own. He saw the hen bird enter the cock's "rolling ground" and cover it herself (*op. cit.* p. 164). He saw the little run and the pose with tail raised, and later on (p. 167) he speaks of the bright colour of the under tail coverts, "which I have seen apparently examined, even touched by one Peewit, when another, their owner, is rolling." But his conclusions differ from mine, for while he attaches no special importance to the latter incident, I believe, as I have described above, that the only part of the performance which is a deliberate display to a prospective mate is the exhibition of the anal parts.

On p. 165 Mr. Selous observes that the hen as well as the cock "rolled," and adds: "It is in a very imperfect, and, as

one may say, rudimentary manner, but I catch the characteristic though subdued motion with the tail." This is very interesting, for my experience has been that the indifference of the hens is one of the outstanding features of their spring behaviour. The only time that the female appeared to take any interest in the proceedings was when she ran forward as described in *d*, and sat down in the spot on which the mate had just displayed, but even then I never saw her assume any of the postures ascribed to the male. Presumably Mr. Selous relied only on behaviour in discriminating between the sexes, for he remarks elsewhere that "in field observation it is impossible to distinguish the one sex from the other." If his discrimination is correct (and Mr. Selous will pardon any implied doubt), his record is of much interest. It is, however, remarkable that the female should share in the actions described in the latter part of his note, which originally, if not now, must have been due merely to the male bird's physical condition.

It is needless to say that the actions that I have recorded did not take place with any regularity, and only to a certain extent with any sequence. *B* and *c* 1 occurred independently over and over again, although they were frequently combined; *c* 2 was nearly always preceded by *c* 1, and *d* was invariably preceded by *c* 1. In order to make the development of the courtship more clear, I append an analysis made from my field notes (see p. 221).

This analysis requires a word or two of explanation. The figures can only be approximate, and refer of course to the number of performances in each case, not to the number of birds seen. Up to five the actual number is given: six to twelve is marked "few," and over twelve as "many." I first observed the birds carefully on February 24th. Two males were posturing as *c* 1 in a stubble field. One four times picked up straws or dry rootlets, and tossed them aside. Afterwards I observed this gathering of straws on March 6th, 12th and 18th, though the birds were at all times accustomed to peck at pebbles, as noted under *B*.

On February 27th, and March 1st and 2nd, the columns are almost empty. The reason is that on these days I tried to carry out observations at daybreak, and found that at that time there

were no birds to be seen in the fields until an hour and a half after sunrise, when about twenty Plover flew over in a flock, presumably from some other feeding ground. They alighted on the plough, and stood about preening themselves and resting. As well as I could identify them through the glasses, all these birds were males.

APPROXIMATE NUMBER OF PERFORMANCES.

Date.	b.	c 1.	c 2.	d.	Remarks.
Feb. 23rd .	0	1	0	0	
" 24th .	4	2	0	0	
" 26th .	1	2	0	0	
" 27th .	0	0	0	0	{ Birds flew in after sunrise.
March 1st .	0	0	0	0	Ditto.
" 2nd .	0	1	0	0	Ditto.
" 4th .	2	many	0	0	Females first appeared.
" 5th .	few	many	0	0	
" 6th .	many	many	2	1	
" 7th .	—	many	few	2	
" 9th .	many	many	few	0	Males plentiful.
" 12th .	3	few	many	1	
" 13th .	—	few	few	0	Birds feeding in pairs.
" 14th .	2	few	many	0	
" 16th .	4	few	many	0	{ Males outnumbered females 6 to 2.
" 18th .	continuous	—	many	1	
" 19th .	few	3	many	0	

On March 3rd I was unable to visit the place, but on the 4th when I, tired of the fruitless morning visit, went up in the forenoon, I found the birds very active, and counted among them four females, or about thirty per cent. of their number. From this date onwards both sexes were present each day, although the cocks always largely outnumbered the hens. On March 5th, 6th, 7th and 9th, the number of performances gradually increased. The male birds were very noisy and quarrelsome. On the 13th and 14th came a diminution in the numbers of actions seen, except in the case of c 2, which became more frequent. On the 13th I first noticed birds in pairs dotted about the field, but there was still a great surplus of cocks, and on the 16th I noted males outnumbered females in proportions of six to two. On March 19th my regular observa-

tions were interrupted by agricultural work in the fields, which disturbed the birds. The labourers quartered the fields constantly for eggs, and one of them told me that he found the first nest with an incomplete clutch on March 25th. I regret now that I did not find out whether the birds bred in the same field that was the scene of their amatory exercises, as this would afford considerable corroborative evidence for some of Mr. Selous's conclusions. I incline to think that a certain piece of ground is resorted to by the birds for their spring performance in the same way that Ruffs repair to their "fighting hills," for the reason that the ploughed field under my observation was constantly occupied by far more birds than could have all nested there, and these birds were all restless and quarrelsome. Meanwhile, on the neighbouring fields of grass and stubble, it was usual to see a number of Plover of both sexes preening and feeding quietly together without excitement. Besides, it is significant that I saw the courtship actions very seldom performed anywhere but on this ploughed field. There is also some little evidence that before the females appeared the male birds visited their playing grounds only at certain times. They seemed to arrive from one to two hours after sunrise, and I much regret now that I did not ascertain exactly when they left in the evening. They certainly were never at the place at dawn until March 6th, but after that date the white coverts of the posturing birds could be seen on the dusky fields long before it was light.

The behaviour of the cocks to one another showed a curious little analogy to that of the Ruffs. Although perpetually bickering there was never any serious fighting. Any quarrel ended in a harmless outburst of aerial swooping. Sometimes two birds charged each other on the ground with outspread wings, but when within striking distance each twirled round and stood with open wings with his back to his rival and bill drawn back, in which position he had a ridiculous appearance of futile pomposity.

In Howard Saunders's 'Manual of British Birds' it is stated: "The 'false nests' often found are scraped out by the cock in turning round when showing off to the female." This description is a little misleading. Judging from what I saw, the

"nests" in question would be made when the bird was "hustling" (c 1 and c 2), and there was no evidence that this performance was gone through without any deliberate intention of charming the hen. Indeed, it was observed just as frequently when there was no female Peewit in the neighbourhood at all, and seemed to be simply an outlet for the male's excitement. I am not sure of the grounds of selection (if there was selection) in this species, but I think that there was a purposive display by the cock, and this display was not the "hustling" action at all, but consisted in the exhibition of the coloured under tail coverts.

From his observations on the courtship of the Peewit, Mr. Selous draws certain inferences as to the genesis of the nest-building instinct in birds. It is common knowledge that the handling of nesting material is a marked feature of the courtship of some species. It has been recorded of the Tufted Duck (Mr. S. E. Brock in 'British Birds'). I have observed it myself in the Reed-Bunting, and of non-British species it is only necessary to mention the Ostrich, the Adélie Penguin, and the Bower Birds. It would take too long to quote all of Mr. Selous's very interesting and ingenious exposition of his theory, but, if I have understood him rightly, he traces the original nest-building impulse back to similar purposeless movements, which were due to sexual excitement. "Its existence (the nest) would have been due to excited and non-purposive movements, springing out of the violence of the sexual emotions." I agree with Mr. Selous that the courtship actions of the *male* have most probably arisen thus, but what of the subsequent nest-building by the female? If the instinct of the hen to construct a nest has arisen from actions that are the outcome of her own physical excitement, why is it that we do not observe these actions more frequently during the mating season? It is not likely that the necessity for amatory exercises as a way of working off emotion should have lapsed in one sex and not in the other, especially when the ancillary, or ought we to say the resultant, passion to make a nest has persisted so strongly. According to the reasoning, we ought to find that certain female birds go through the same spring antics as the male. I know of none that do so, and Mr. Selous himself does not give any example, except that of the

Peewit alluded to previously. He does, indeed, remark: "In most birds probably—though this has been taken too much for granted—these frenzied movements, arising out of the violence of sexual desire, are more violent and frenzied in the male than in the female." But he goes on to say: "In this way we may see, upon my theory, the reason why the cock bird so often helps the hen in making the nest; nor is it more difficult to suppose that the hen in most cases may have been led to imitate him, than it is to suppose the converse of this." In the first place, it is at least very arguable whether the cock bird does often help the hen. From my own experience—which I quote with much diffidence, well knowing that it will not bear a moment's comparison with that of Mr. Selous—I should have said that the evidence went quite the other way. With regard to the latter part of the sentence, I admit that at first sight the complete spring procedure of the male Peewit looks extraordinarily like a rehearsal of what will take place by and by. There is the gathering of nesting material, and the formation of a nest, accompanied by significant postures. Here, on a superficial glance, we have something that looks curiously like a "suggestion" to the hen, that she may "imitate" in due course.

But when this "converse," that Mr. Selous rejects, is examined, the facts do not seem so plain. No one can have watched an incubating Plover or other ground breeder at close quarters without noticing the time spent by the bird in arranging the surrounding leaves, bents, &c., round the eggs, and it is well known that all nests undergo considerable repairs and structural alteration when circumstances require it. For instance, I have known a Dunlin, whose nesting hollow was flooded during the night, collect a rim of bents a quarter of an inch high round her breast. She did not grasp the necessity of raising the eggs themselves out of the wet, and consequently both she and they were still lying in water, but in her futile attempt to protect them and herself from the damp ground, do we not see the phylogeny of the nest ontogenetically reproduced? I find no difficulty whatever in believing that the origin of nest-building can be traced to the desire of the hen bird to shield her eggs from the mud. It is the very obvious remedy for a very obvious evil. But to imply, as Mr. Selous appears to do, that it

either arises or ever arose from imitation by the hen of the cock seems in the highest degree fantastic, and the idea is scarcely less improbable if we suppose that the cock's was the later impulse which arose consciously or unconsciously from experience of what the subsequent behaviour of the hen would be.

Until it is proved that it is the rule and not the exception for the female bird to display in the same fashion as the male, and for the male to share with the female the work of building the nest, I submit that there are no grounds to suppose, apt though the correspondence may be, that the two instincts (*i. e.* of the collection of nesting material in courtship by the cock, and of the making of the actual nest by the hen) have arisen otherwise than independently of each other.

[NOTE.—Since the foregoing notes were written I have learned that in the 'Zoologist' for 1911 Mr. S. E. Brock published an article on the courtship of the Peewit, and that the conclusions he drew as to the display are very similar to those I have put forward above.—M. D. H.]

NOTES AND QUERIES.

MAMMALIA.

Unusual Site of Rabbit's Nest.—On a farm in this parish a Rabbit has made her nest and brought forth her young just under the ridge at the top of a straw stack. The young have successfully made the descent to earth.—WALTER B. NICHOLS (Bradfield, Manningtree).

Variety of Water-Shrew (*Crossopus fodiens*).—A friend sent me a very nice variety of the Water-Shrew; it is almost white. It had black eyes, not pink, albino eyes. It was caught by a Cat and brought into the house. I have another similar specimen caught by the same Cat a short time ago; they were both caught from the same brook which runs near the house. This is the third specimen I have in my collection of almost white varieties of the Water-Shrew. The first-mentioned was obtained on July 23rd, 1914.—WILLIAM DAWS (Mansfield, Notts).

Pink Eyes in Dog.—Common as white Dogs are, I have never seen a pink-eyed white one till last month, when I noticed one evening that a pink-nosed white Pekinese in the possession of a passenger in a tube train seemed to have pink eyes. I have since got a good look at what I believe to be the same animal at close quarters in daylight, and find it has the pupils pink and the iris very pale blue; the person then in charge of it told me that the eyes look all pink at night, and that the Dog had had a mate with similar characters.—F. FINN.

Animal Fascination.—I once had an opportunity of seeing the terrorising power a beast of prey can have over its victim. In a pasturage beside a wood a number of wild Rabbits were feeding when the mask of a Fox appeared through the hedge. A large Rabbit, fairly near the intruder, gave the alarm by striking the ground with both hind feet twice, and then bolted for cover in the opposite direction, followed by all the others, save one small creature, who crouched in the grass, gazing at the Fox with dilated eyes. It uttered piercing squeals as the Fox approached, but did not attempt

to escape. The Fox silently took it by the nape of the neck, gave one quick shake, and glided away with the limp form hanging from his mouth. The victim was one of the smallest of the colony, being one of a litter born five weeks previously. The other Rabbits returned to their interrupted supper in a very few minutes after the departure of the raider.—(Miss) M. CALLARD (East Dulwich).

Whiskered Bat (*Vespertilio mystacinus*) in Lincolnshire.—On May 20th last I picked up in my garden here an injured specimen of the Whiskered Bat, and have sent it for preservation for the Lincoln Museum. This, I believe, is the first definite record of the occurrence of the species in this county. Mr. G. H. C. Haigh has failed to find the species in North Lincolnshire ('Zoologist,' 1887, p. 144), and there is no record for the county in the excellent article on this species by Mr. J. E. Harting ('Zoologist,' 1888, pp. 161–166). The late Major Barrett-Hamilton wrote to me on February 13th, 1913, that he had no actual record for Lincolnshire, though, taking into consideration its known distribution in East Anglia, it probably occurred in the county. I was not able to include the species definitely in my list of the Lincolnshire mammalia in the 'Transactions' of the Lincolnshire Naturalists' Union, 1912, and so it is satisfactory now to know that the species does occur in the county, at any rate in the district between Lincoln and the Notts border.—F. L. BLATHWAYT (Doddington Rectory, Lincoln).

Notes on the Cervidæ of Bedfordshire.—IRISH ELK (*Cervus megaceros*).—In the collection of Professor Joseph Prestwick, F.R.S., purchased by the Natural History Museum, South Kensington, in 1894, are a lower molar and the base of an antler which are labelled as of this species. They came from the Midland Railway cutting at Bedford, and were associated with remains of Hippopotamus and Red Deer. Mr. C. W. Andrews, who kindly gives me the above information, remarks that these specimens are very unsatisfactory material for a definite determination, but certainly agree most nearly with the above species.

RED DEER (*Cervus elaphus*).—In the famous gravel beds at Biddenham and Kempston, as well as in many other localities remains of Red Deer are frequently found along with palæolithic implements, the Mammoth, Hippopotamus, Ox, Horse, &c. Mr. J. Wyatt* wrote of great numbers of their antlers, some shed, and others with portion of skull attached, also teeth and bones, being

* 'Quarterly Journal Geological Society,' vol. xx. p. 186 (1864).

found at Summerhouse Hill, Cardington. Some massive antlers from that locality are in the Wyatt collection now in the possession of the Corporation of Bedford; the two largest being—No. 1, width of burr $4\frac{1}{4}$ in., circumference $12\frac{1}{2}$ in., width of beam above the burr 3 in.; No. 2, width of burr $3\frac{1}{2}$ in., circumference 11 in., width of beam above the burr $2\frac{7}{8}$ in. Mr. Worthington G. Smith presented me with numerous portions of antlers and other remains that he found during excavations in the waste pits at "Maiden Bower," and at the Blow's Down hut dwellings at Dunstable, which both date from the Bronze Age. None of these bear comparison with the largest of the Glacial Age; the heaviest measuring: width of burr 3 in., circumference $9\frac{1}{2}$ in., width of beam above the burr $2\frac{5}{8}$ in., above brow line $1\frac{7}{8}$ in. Fragments of antlers have also been found in association with the Roman occupation in this county, and other finds have been made probably dating a much more recent period. To what century the Red Deer existed in a wild state in Bedfordshire I am unable to say. Woburn Park, the seat of the Duke of Bedford, is the only place in the county where this animal is preserved. Whitaker,* in 1892, gave the number of this Deer at sixty.

FALLOW DEER (*Cervus dama*).—The former existence of this Deer in a wild state in Bedfordshire rests on the finding of a brow tine portion of an antler, now in the writer's possession, that the late Major W. Cooper-Cooper obtained with Anglo-Saxon remains dug up in a gravel-pit near Fancut, Toddington, and there is little doubt that this portion of antler dates also from that period. At Woburn Park Whitaker† gives the number of this Deer in 1892 as three hundred and eighty, and in Wrest Park, Silsoe, two hundred. On the latter estate at the present time they number about two hundred to two hundred and twenty, but these will cease to exist before the end of the year.

REINDEER (*Rangifer tarandus*).—Fossil remains of the Reindeer seem to occur not uncommonly in the Pleistocene gravels of the Ouse Valley in this county. In the Wyatt collection are several portions of antlers of this animal; they are labelled "Howard's Field, Bedford," another "Bletsoe," and a third "Kempston Road. Mr. J. Wyatt"‡; also found Reindeer at Summerhouse Hill, Cardington. Harting,§ quoting probably from the same authority, writes of the

* 'The Deer Parks and Paddocks of England,' J. Whitaker. 1892.

† *Loc. cit.*

‡ 'Quarterly Journal Geological Society,' vol. xx. p. 186 (1864).

§ 'Extinct British Animals,' J. E. Harting. 1880.

remains of Reindeer being found at Bedford, associated with flint implements, Red Deer, and Hippopotamus. In the collection of Mr. Worthington G. Smith there are at least parts of five antlers, all from Kempston, and several in my own possession from the same locality.

ROEBUCK (*Capreolus caprea*).—It is owing to the indefatigable researches of Mr. Worthington G. Smith, F.L.S., that I am enabled to include the Roebuck as evidently at one time plentiful in the county. Amongst the refuse accumulations of the Bronze Age dwellings discovered by him at "Maiden Bower," and on the hut floor bottoms some 3 ft. to 4 ft. deep at Blow's Down, Dunstable, were found remains of this Deer. Two almost perfect and fully developed antlers, one from each locality, being presented by him to me. Further remains of this species were also found by the same authority in the chalk cutting north of Dunstable. These latter being in association with Roman remains, it brings forward the occurrence of this Deer in the county to a still more recent period.—J. STEELE ELLIOTT.

AVES.

Observations on Bird Life in Aberdeenshire.—Some peculiar conditions prevailing brought forward here a closer association in various birds with winter and spring than I ever saw before. Migrants in ordinary seemed to leave comparatively early, considering the weather. The Sky-Lark made a continuous effort at singing through the winter; on January 15th I satisfied myself that it was the abundance of worms available for food which made this bird sing. Another phenomenon was the continuance of a male Pied Wagtail all winter. Whether he had been here in summer or landed in the fall I know not. He was a good specimen, and might have chosen to stay on through superior physique or otherwise, or may have landed from some summer resort further north or so. He appeared at times near houses on turnip fields. He seemed alone at the plough on March 11th; by March 16th there were plenty along this route; he was rather shy. The Lapwing was heard on December 29th. None just here until February 16th, so far as I knew. A Redshank appeared on November 4th and 5th; might have stayed, but Lapwings fought it. Appeared very tame on March 9th, evidently before storm. Golden Plover whistling in Alford, N.B., on November 17th. At work here on February 16th. The Curlew last noticed on September 22nd; flock at Breda, Alford, on March 9th. Here, six miles further inland, on 11th. Flocks here later, and continue this

way during stormy weather. The last call of the Oystercatcher on September 1st; appeared at Breda on March 9th, besides Curlews; here on the 10th with Redshanks at the plough. There were three species of Gulls frequenting this part—very tame at plough from March 7th—I believe Brown-headed Mew, Green-billed Gull (*Larus canus*); the other was smallest and strange to me. Would it be the Little Mew or Gull (*Larus minutus*)? * A large gathering of Waterhens appeared here in the fall, feeding even among poultry on the fields; they moved away later. Flock of wild Geese heard and seen going south on October 16th; heard passing north, evening, March 18th. An interesting case of a Bullfinch appearing here on December 23rd during the very severe frost; they make periodic visits at any season of the year here.—WILLIAM WILSON (Aberdeen, N.B.).

Hawks Selecting White Young Pheasants; Young Pheasants flying without apparent cause.—During my experience as a game-keeper I used to notice that if we had a white chick among the young Pheasants, a Hawk was sure to take it; is this a usual experience? Secondly, why do young Pheasants, when about a month old, often suddenly get up in a body and fly round like Pigeons, to settle again near where they started? They make only one sweep, and low down; I could never find a Stoat or any such enemy to account for it; so perhaps they only do it for exercise.—WM. ELCOMBE (Regent's Park).

Some Migratory Incidents in May.—The Swift, Swallow, House and Sand-Martins all appeared about the same time, that is, from May 3rd to 6th. I noted two Tree-creepers here on 10th, probably nesting in a small clump of trees; the last I noted was in mid-winter some seasons ago. I had a flock of Fieldfares on my grass on 13th, the result of the wintry cold, snow being on high ground. I do not recollect this before at the date when nesting would have been in progress. There might have been some Mistle-Thrushes too. I noted Warblers at various points over several miles on 18th, but they seemed mute and shy, the result of the cold. I observed on the wayside a White Wagtail on 18th near Mossal, the first I have ever seen. A feature worthy of notice is that up to date of writing—May 31st—I have seen no Wheatear (*Saxicola oenanthe*) nor Whinchat nor Stonechat. Quoting from 1906, I have the first, April 8th (Zool. p. 196); second, May 19th; with no appearance of the third

* Not at all probable, this bird being a rare visitant, and very small, only size of tame Collared Dove.—(ED.)

which was then fading in area. I noted all three here in 1914.—
WILLIAM WILSON (Aberdeen, N.B.).

Moorhen Nesting in Disused Nests of the Magpie.—Frequently the Moorhen selects a nesting-site several feet above the water, finding suitable accommodation on the tops of stumps, ivy-covered trees, in overhanging bushes and such-like. In one instance that came under my notice at Muggerhanger a pair had utilized as a foundation for their nest a Ring-Dove's platform built in a hawthorn tree overhanging a pond, some twelve feet above the water. But what is unique in my experience is a pair using nests of the Magpie. I was informed that three eggs had been taken from a nest on a hawthorn tree on May 1st last, alongside Duloe Brook at Basmead, Bedfordshire, and, wishing to satisfy myself on various particulars, I visited that locality. The tree was some little distance from the stream, and the nest thirteen feet above the ground, and scantily lined with just a few blades of rush. Visiting another Magpie's nest on May 15th, along the same brook and at some short distance away, I found what was evidently the same bird sitting on four eggs, three others being smashed on the ground beneath. This nest was built in some very tall blackthorns, and seventeen feet above the ground, and in this instance a better lining had been added, but by no means the complete inner lining to a normal Moorhen's nest.—J. STEELE ELLIOTT.

Malformed Beak of the Jackdaw.—A friend sent me a Jackdaw with a curious malformed beak. It is a perfect copy of the beak of the Common Crossbill. It is a wonder how the bird managed to obtain its food, yet it was in good condition. A man shot it along with three Rooks. The shooter said he was going to make scare-crows of them to keep the Rooks from his potatoes, but my friend noticed its curious beak, and asked him for it. I have now mounted it for my collection. It was killed the last week in April, 1915, but I do not know the exact date.*—WILLIAM DAWS (Mansfield, Notts).

The Food of the Tawny Owl.—Two broods of Tawny Owls have been under my observation during the last few weeks, and when a keen young naturalist from one of our public schools paid me a visit during the Easter holidays, I had the pleasure of showing him both

* In a garden at a schoolfellow's house at Maidstone we were shown in our boyhood a Jackdaw allowed to go about free with a clipped wing, and find its own food, but nevertheless the upper bill was overgrown and curved down, so that the beak looked like an eagle's exaggerated.—(ED.)

families, with three young in each. One pair of Owls nested in a box near this house, the other in a place in the church tower which they have now used with more or less success for nine years following. In the box we have only found remains of the Mistle-Thrush and Starling, but in the tower Rats (six), Field-Mice (three), House-Mouse (one), Thrush, Blackbird, Robin, Hedge-Sparrow, Swallow, Sparrow, Chaffinch, and Greenfinch. One evening two schoolgirls came to the church to see the Owlets, both being interested in Nature-study, and we found that an unlucky Kestrel had got into the tower. As the upper part is wired in, the question was how to get him out, and the poor bird's efforts to escape were pitiful. We could not bear the idea of his dying of slow starvation, and one of the girls made a plucky effort to catch him by scrambling over an ancient and by no means secure bell-frame, but just failed. Next day I went up and found the Kestrel still there, and in the Owl's nest the remains of a Thrush and a young Rat. These I felt justified in using as food for the Hawk, so I put them in a conspicuous place on a cross-beam, and the next day every trace was gone, also the Kestrel. Probably from his feeding-place he either saw or heard the Owlets, came down to them, and made his escape by the loop-hole. Another day one of the old Owls was in the tower, but seemed quite at home. Perhaps few Owls' nests have had more numerous and more appreciative visitors than ours, and there is every reason to hope and believe that a generation of young Nature-lovers is growing up among us, far more observant and less destructive than some of us were thirty or forty years ago, for whom the field-glass and the camera have taken the place of the gun and the collecting-box.—
JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Successful Courtship of Javan Peafowl.—It is such a common observation that hen birds seem unimpressed by the display of their males, that what I observed at the Zoo this spring with the Javan or Burmese Peafowl (*Pavo muticus*) seems worth recording. The male was in full display when the hen came up and looked at him; he rustled his train and uttered a peculiar long shrill cry, quite different from his ordinary note (which is like the call of the common Peacock, but much subdued); this seemed to show excitement, but the hen walked round behind him and seemed unimpressed. However, she came round in front again, was again greeted with a rustle of the train, and then crouched on the ground. The cock again uttered the peculiar shrill cry, and pairing immediately followed, after which he displayed for some time, while the hen wandered off and

ultimately lay down. Now the pairing of Peafowl is very rarely observed; I have only once seen it even with the common or Indian species (*P. cristatus*). In this case, also, the cock was displaying, and uttered a peculiar call (but not exactly like the Javan bird's) before the act, but there was no obvious attention to the display or invitation on the part of the female.—F. FINN.

Use of Muscovy Ducks and Guinea-fowls.—In times like the present, when expenses are being cut down everywhere, there is a danger that the above birds may be killed down as not worth their corn. I should, therefore, like to put in a plea for the Muscovy Duck as the most easily bred and reared of all poultry; the females are as motherly as any hen, and the birds will thrive away from water better than common Ducks. I recently bought, and tried the flesh of, a bird of this species—a male of about 9 lb. weight—bred two years ago at the Zoo from an imported wild male; though not of quite so fine a flavour as a good common Duck, it was not tough, as I have found adult Muscovys which I have had to eat on board ship, and had no objectionable taste, nor was it grossly fat, though it had passed its life in an enclosure about six yards square. With regard to the Guinea-fowl, its table excellence is well known, but it is not much kept; what I should like to draw attention to is its extreme watchfulness, which might render it a useful sentinel against air attacks. Last summer an aeroplane-shaped kite was flown over the Zoo, and of all the birds a common Guinea-fowl (of the wild race) was the most loudly and persistently clamorous. Of course, such birds would only be useful where air-craft are but rarely seen.—F. FINN.

A Correction.—"Ornithological Report for Norfolk."—On p. 123 of this "Report" the names Zwanenwater and Naardermeer have been accidentally transposed. Mr. Jac. P. Thijsse, of Binnenduin, is pretty sure that the Spoonbills which come to Breydon Broad are non-breeding birds from these two Dutch resorts, the more so because in July and August Spoonbills are to be seen in Holland flying about the country miles beyond their breeding-places. As Secretary to the Dutch Bird Protection Society, Mr. Thijsse naturally takes great interest in the welfare of these Spoonbills, and it was with his assistance that the excellent map of their breeding-places by Mr. C. Candler was prepared for the Norwich Naturalists' 'Transactions' (vol. v. p. 166). On p. 138, line 34, Tawny Owls should read Barn-Owls. Page 126: Dr. C. B. Ticehurst questions the Rooks and Hooded Crows which have been seen arriving at Yarmouth in

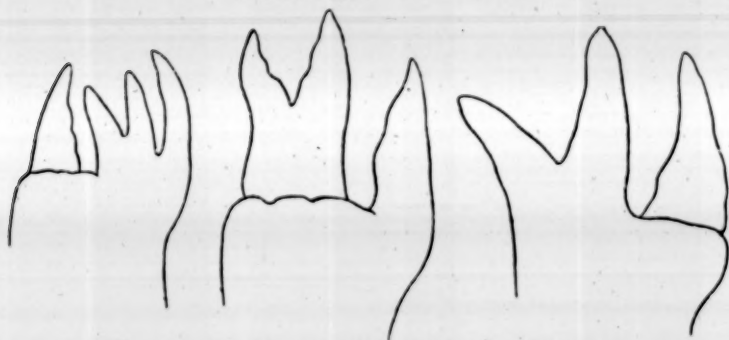
February being really oversea migrants. He sees this movement on the coast (at Lowestoft) every year, and is of opinion that they are only birds which have essayed the easterly passage, and after putting out to sea have turned back again, either because of haze at sea, or because the wind was too strong for them. Page 140, line 7, add: An adult Wood-Sandpiper in summer plumage was received by Mr. H. Pashley on September 1st.—J. H. GURNEY (Keswick Hall, Norwich).

CRUSTACEA.

Notes on the Edible Crab (*Cancer pagurus*).—I was much interested in looking over some back numbers of the 'Zoologist' to read some remarks by Mr. Arthur H. Patterson on the size and weight of the Edible Crab ('Zoologist,' 1913, p. 77). In the Baily Museum at Mansfield there is a specimen from Mount's Bay, Cornwall—in fact, it was taken at Mousehole—which weighed 9 lb. 6 oz.; the girth of the hand is $9\frac{1}{8}$ in. I have one in my own collection from

ABNORMAL HANDS OF CRABS.

Double chela.



Left inside.

Left inside.

Left outside.

the same place that weighed 10 lb. 7 oz.; length of carapace $7\frac{1}{4}$ in., breadth of carapace $10\frac{1}{2}$ in., length of front leg to point $17\frac{1}{2}$ in., girth of wrist $9\frac{1}{2}$ in., length of chela $5\frac{3}{4}$ in. Some years ago I sent home from Mousehole a living Edible Crab to be used for the table that weighed $11\frac{1}{2}$ lb., but no portion of it was kept; of course it had to be broken up to obtain the contents for the table. I send you a rough sketch of three claws that I have recently obtained for my collection (I have the Crabs entire); you will see by the sketch that one has a *double* movable chela.—WILLIAM DAWS (Mansfield, Notts).

NOTICES OF NEW BOOKS.

Life-histories of African Game Animals. By THEODORE ROOSEVELT and EDMUND HELLER. In two volumes. London: John Murray. 1915. £2 2s. net.

THIS is by far the most important book on the subject of bionomics generally, and the large African mammals in particular, that has appeared of late. It is well illustrated by photographs of animals living and dead, by the beautiful drawings of Mr. Philip R. Goodwin, and by many maps; and the treatment of the subject is admirably clear and very readable, without any of the odious journalistic touch which has crept so much into zoology of late years. Although of the two authors each has "reviewed, added to, and assented to the work of the other, and their responsibility for the entire book is joint," the first drafts of the life-history accounts of the species and the introductory chapters on "Game Reserves" and on "Concealing Coloration" were written by Colonel Roosevelt; the other introductory chapters on the "Derivation of the Fauna, Geologically and Palæontologically" and on the "Flora of East and Middle Africa and its Relation to the Fauna," and the technical descriptions, including the nomenclature used, are especially the work of Mr. Heller. It is here that working naturalists may find some points that are not to their taste, such as the separation of the Lion (an animal better and more anciently distinguished as a species than any other) into subspecies (though in the life-history portion it is stated that development and colour of mane are individual), and the generic separation of the White-tailed and Brindled Gnu. These, however, are of comparatively little importance and do not affect the great value of the major portion of the book in which the predominant influence of the ex-President is apparent. Here the work goes far beyond the subject of African game, and launches into discussions on more general topics, handled in a masterly manner

which should ensure the book a welcome in every library, where it may be of use to students of evolution as well as to the much smaller class to whom it would seem especially to appeal. Colonel Roosevelt, for instance, although quite able to see the utility of protective coloration in certain cases, is strongly opposed to the school which see it everywhere and give it exclusive survival value, and his treatment of the subject may be well exemplified in the following passages, dealing not with African animals but with forms more familiar in our own fauna.

After quoting the theory that the white-spotted coats of the Fallow and Axis Deer are protective in their environment of sun-flecked woodland, and that such spotted patterns evolve into self-colours when they "fail to serve any useful end," he says:—"If only the Fallow Deer and Axis were considered, it would seem convincing. But it breaks down completely when other Deer, the majority of Deer, are considered; for although they still live in the cover afforded by vegetation, and are descended from spotted forms, the adults, in the large majority of the species, have lost their spots. Take the abundant and widely-spread white-tailed Deer of America, which, in its various forms, extends from the northern isotherm marking the northern range of the Fallow Deer to the tropics, between the isotherms in which the Axis dwells. The fawns are spotted; doubtless the adult ancestral Whitetails were spotted; the Whitetails live now in just such cover as do the Fallow Deer and Axis; and yet they have lost their spots and are solid-coloured above. It seems incredible that natural selection can be responsible for both of two such diametrically opposite results; and, of course, if being spotted tends to conceal the Deer, then the loss of the spots cannot have been due to natural selection making for a concealing coloration. This is self-evident. The Red Deer, which lives in the same country as the Fallow Deer, and the Sambur, which lives in the same country as the Axis, have also both lost their spots in the adult forms. All these Deer have substantially the same foes; Wolves or Wild Dogs and the big Cats. If a spotted coat really is concealing, then surely natural selection ought not to have eliminated it in the great majority of the Deer, as it has actually done."

The above passage well illustrates the philosophical manner

in which the authors treat the current ideas widely accepted by naturalists of less experience; equal philosophy and wealth of wide observation is shown in the following, in which they discuss the gait of heavy ungulate mammals: "It (the Eland) has one characteristic seemingly inconsistent with its great size and lack of speed, and that is its extraordinary power of leaping. When startled, and beginning a run, the huge cows, and even the bulls, bound like Gazelles, leaping clear over one another's backs. It is extraordinary to see such bulky, heavy-bodied creatures spring with such Goat-like agility. It would seem that the mechanical reasons which make the trot their natural gait, and make their gallop slower and more tiring than the gallop of the Oryx or Hartebeest, would also limit their jumping powers; but this is not the case. They are heavier-bodied than Moose or Wapiti, with huge necks and barrels, and pendent dewlaps and wrinkled neck skin, yet, for a few seconds after starting, they make high jumps of a type which Wapiti rarely, and Moose never, attempt. The Wapiti, however, although their normal gait is also the trot, and although heavy Wapiti bulls are speedily exhausted by a hard gallop, at least sometimes run faster than running Black-tailed Deer—we have seen this ourselves—whereas the Eland is at once left behind by frightened Oryx or Hartebeest—as we have, also, ourselves seen. The Moose is even more of a trotter than either Eland or Wapiti. Young Moose will occasionally gallop, not only when frightened but even when at play; but the old animals practically never break their trot, except that, as we have been informed by entirely trustworthy hunters, when suddenly and greatly startled they may plunge forward for a few rods in a kind of rolling run. We ourselves once saw the tracks where a big (though perhaps not quite full-grown) Moose had thus plunged for a few jumps at a gallop. These very big and heavy species of Antelope and Deer evidently find the trot, and not the gallop, their natural speed gait, whereas the smaller Deer and Antelope find the gallop equally natural—although the Gerenuk trots fast and the Rocky Mountain Blacktail proceeds by buck-jumps. The big Zebra trots much more freely than the small Zebra. From these examples it would seem natural to lay down the rule that increase in size and bulk tends to make the trot mechanically preferable to the

canter and gallop. But this does not apply to cattle; Bison and Buffalo, unlike Eland and Moose, always gallop when at speed; and the Giraffe, which is bigger and heavier than any of the pure trotters, never trots at all, passing immediately from a walk to a canter or gallop. It all illustrates anew how limited our knowledge really is, and how cautious we must be in dogmatizing, or in glibly advancing explanation theories of universal applicability." This is quite in the vein of Darwin's cautious treatment of his own suggestions; in fact, taking this book and other of Colonel Roosevelt's works with which we are acquainted, we are inclined to think that in a politician and man of affairs we actually have the "second Darwin" some zoologists are waiting for.

The Amateur Menagerie Club Year-Book, 1914. Edited by
G. TYRWHITT-DRAKE.

THIS neat little volume, illustrated by quite a number of photographs, is the third year-book which has been issued by the Amateur Menagerie Club, which now numbers sixty-eight ordinary and four honorary members. The papers contributed vary much in subject and merit, and some really useful observations are recorded. Notable among these is Mrs. Rose Butler's note on the liking exhibited for plums, gathered by itself from the garden wall, on the part of her tame Striped Hyæna, and the fact that in its disposition the beast is rather Cat-like than Dog-like (confirming the evidence of its anatomy), and that it is in good health and shows no signs of age at thirteen years old. Mr. Tyrwhitt-Drake himself contributes also some good notes on Lions; he finds that these animals recognize their human friends by the voice* rather than by sight, and mentions a troupe of four performing animals which he knows to be twenty-one years old, but finds still "healthy and presentable, though very slow." Dr. Graham Renshaw, in an article on "Rare Beasts in Continental Zoos," records a white Himalayan Bear

* *Apropos* of this, we may mention that in taking parties round the Zoo, we have never been able to complete our peripatetic lecture in the Lion-house; the Lions always try to roar us down, disliking our voice, no doubt!

seen by him at Amsterdam in 1900; there was one recently at our Zoo with white fore-paws and the breast patch much extended downwards, by the way. He says the fur had "a yellowish tinge quite distinct from the pure snowy whiteness of a Polar Bear"; but, as a matter of fact, Polar Bears, at any rate when adult, are generally creamy or straw-tinted, though whiter as cubs. Students of inheritance will find interest in Professor Cossar Ewart's papers on "Experiments with a Mexican Dog (of the Chihuahua breed)" and with Prejvalsky's Horse. In a future edition, by the way, more attempt should be made to ensure correct spelling of names.

Report on Cetacea Stranded on the British Coasts during 1914.

By Dr. S. F. HARMER, F.R.S. British Museum, 1915.
1s. 6d.

THIS Report on the specimens of Cetacea stranded on our coasts during 1914 has been carried through by the aid of information communicated owing to arrangements made by the Board of Trade, and these have been more thoroughly carried out than in 1913, at least until the outbreak of war naturally occupied coastguards otherwise. In spite of this, however, fifty-seven records go to the share of 1914, as against seventy-six in the previous year, and the evidence obtained for 1914 is more precise, efforts having been made to obtain the lower jaw of small species and a plate of whalebone in the case of Whales possessing this, such samples being generally sufficient for the identification of species. The Report, which is illustrated with a text-figure and three maps, deals with the following species: Common Porpoise (*Phocæna phocæna*), Common Dolphin (*Delphinus delphis*), White-beaked Dolphin (*Lagenorhynchus albirostris*), Bottle-nosed Dolphin (*Tursiops truncatus*), Pilot Whale (*Globicephala melæna*), Bottle-nosed Whale (*Hyperoodon rostratus*), Sowerby's Whale (*Mesophodon bidens*), Common Rorqual (*Balænoptera physalus*), and Rudolphi's Rorqual (*B. borealis*). As one would expect, the records are far the most numerous in the case of the first-named, and on fifteen more or less complete specimens of the lower jaw an interesting study of the teeth and rate of growth has been based by Dr. Harmer.

A List of the Birds of Malta. By GIUSEPPE DESPOTT.

MR. DESPOTT, who is Curator of the University Museum of Natural History at Malta, has compiled a useful list, with local as well as English and scientific names, of the birds observed at Malta up to the end of last year. Most of these are visitants on migration only, and many of them uncommon at that, the chief regular breeders being the Blue Rock Thrush (*Monticola cyanus*), Spectacled Warbler (*Sylvia conspicillata*), Spanish Sparrow (*Passer hispaniolensis*), Corn-Bunting (*Emberiza miliaria*), Short-toed Lark (*Calandrella brachydactyla*), Kestrel (*Falco tinnunculus*), Southern Herring-Gull (*Larus cachinnans*), and Storm Petrel (*Procellaria pelagica*). There seems to be a regrettable diminution in many species.

Some occurrences are very remarkable, such as that of the Indian Brahminy Kite (*Haliastur indus*), though this harbour-haunting bird might easily accompany a ship; and that of the Algerian Bush-Babbler (*Argya fulva*), which we consider more curious than that of *Porphyrio cæruleus*, which Mr. Despott excludes. True, the species is local, but it can swim, and the *Rallidæ* generally are notorious for turning up in out-of-the-way places.

Hamlyn's Menagerie Magazine. Nos. 1, 2. Monthly, 1s.
London, 1915.

WE are glad to welcome 'Hamlyn's Menagerie Magazine,' as the work of our animal dealers has never received sufficient recognition from zoologists, though the German firm of Hagenbeck has been lauded to the skies. Mr. Hamlyn relates in a racy way some interesting episodes in a fascinating though very speculative business—the provision of one thousand live Monkeys at a fortnight's notice is really a remarkable feat—and if he can induce his gifted wife to publish her unrivalled experience in the management of Chimpanzees, he will be doing a real service to science as well as promoting the business he has so long and pluckily conducted. The second number is, if anything, better than the first, and has two excellent photos of the Dublin Gorilla.





NEST OF WILLOW GROUSE.



YOUNG OF WILLOW GROUSE.



WILLOW GROUSE, FEMALE.